

**STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION**

Illinois Commerce Commission,)	
On Is On Motion,)	
)	
v.)	Docket 00-0720
)	
Peoples Gas Light and Coke Company,)	
Respondent.)	
)	
Reconciliation of Revenues Collected)	
Under Gas Adjustment Charges with)	
Actual Costs Prudently Incurred.)	

**PREPARED DIRECT TESTIMONY
OF ROBERT J. MICHAELS
ON BEHALF OF THE
CITY OF CHICAGO**

May 31, 2001

1 **I. INTRODUCTION**

2
3 **A. Education and Employment**

4
5 Q. Please state your name, positions, and address.

6
7 A. My name is Robert J. Michaels. I am Professor of Economics at California
8 State University, Fullerton, and Affiliate Consultant with Tabors, Caramanis &
9 Associates (TCA) of Cambridge, Massachusetts. My business address is 1440
10 N. Harbor Blvd., Suite 800, Fullerton, California 92835. My e-mail is
11 rmichaels@tca-us.com.
12

13
14 Q. Please describe Tabors, Caramanis & Associates.

15
16 A. TCA is a firm of engineering and economic consultants with extensive
17 experience in the restructuring of the U.S. electricity and gas industries. The
18 firm's experts have testified before federal and state courts, state regulatory
19 commissions and the Federal Energy Regulatory Commission (FERC). TCA is
20 headquartered at 50 Church St., Cambridge, Massachusetts 02138.
21 Additional information on the firm is available at www.tca-us.com.
22

23
24 Q. Please describe your professional background.

25
26 A. The following summarizes my biography, which is attached as Exhibit RJM-1.
27 I hold an A.B. degree from the University of Chicago and a PhD from the
28 University of California, Los Angeles, both in economics. I began my
29 professional career as Staff Economist at the Institute for Defense Analyses,
30 then in Arlington, Virginia, where I performed research in the mid-1970s for
31 the Department of Defense and other federal agencies. I then returned to
32 California as Associate Professor of Economics at California State University,
33 Fullerton, and was promoted to Professor of Economics in 1980. Since that
34 time I have also taught as adjunct faculty at the University of Southern
35 California's Graduate School of Business and in the Claremont Graduate
36 School's PhD program in economics. I currently serve as Co-Editor of
37 *Contemporary Economic Policy*, a peer-reviewed journal of the Western
38 Economic Association.
39

40
41 **B. Consulting and Research**

42
43 Q. Please describe your background in economic consulting.

44
45 A. During the 1980s I began working as an independent consultant on FERC
46 proceedings and antitrust litigation in electricity. In that period I also
47 consulted on open access to interstate gas pipelines and advised the
48 Treasury of New Zealand on the competitive implications of electricity

denationalization. In 1992 I joined JurEcon, Inc. of Los Angeles, where I performed economic analyses of contract damages, international transfer prices, and the merger between the Union Pacific and Southern Pacific railroads. In 1994 and 1995 I testified as an invited expert at the California Public Utilities Commission's (CPUC) initial hearings on electrical restructuring. I also testified before the California Energy Commission on issues in electrical market design. In 1996 I joined Hagler Bailly Consulting of Arlington, Virginia (now PA Consulting) as Senior Advisor, while maintaining my professorship and residence in California. My work for that firm included an affidavit before the FERC on the Long Island Power Agency's takeover of Long Island Lighting Company. In 1998 I co-authored a frequently-cited study of price spikes in midwestern electricity markets during the summer of that year.

In 1999 I joined Econ One Research Inc., a consulting firm in Los Angeles as Special Consultant. In March and April of that year I authored three affidavits, filed at FERC (Dockets No. ER98-2843-006 et al and ER98-2843-007 et al), analyzing reports by the California Power Exchange (PX) and Independent System Operator (ISO) on competition in the state's new electricity markets and on reform of Reliability Must-Run (RMR) contracts for generators. Later in 1999 I testified on utility rate designs in the CPUC's docket on post-transition electrical ratemaking. In 2001 I joined TCA as Affiliate Consultant.

Q. Have you ever testified before the Illinois Commerce Commission (the Commission or ICC)?

A. Yes. In 1997 I submitted direct and rebuttal testimony in ICC Docket No. 95-0551. The Commission requested that I analyze the potential impact of the merger between Union Electric and Central Illinois Public Service Company on retail competition in Illinois. Although Illinois at the time had retail monopoly, the Commission was concerned about its effects on competitive markets that were under consideration at the time.

Q. Please describe your professional and research activities.

A. In recent years I have published numerous articles in both professional and trade journals on the restructuring of the electricity and gas industries. Among other outlets, they have appeared in *Public Utilities Fortnightly*, *The Electricity Journal*, *Natural Gas*, *Regulation*, and *Energy Law Journal*. Publications on the gas industry include
"The New Age of Natural Gas: How the Regulators Brought
Competition" [*Regulation*, 1993]

95 "Reducing Risk, Shifting Risk, and Concealing Risk: Why are there
96 Long-Term Gas Contracts?" [chapter in J. Kalt and J. Ellig (Eds.), *New*
97 *Horizons in Natural Gas Deregulation*, 1996]

98
99 (Co-author with Charles G. Stalon) "Decontrol of Wellhead Prices and
100 the First Wave of Gas Industry Restructuring" [Chapter in A. Tussing
101 and B. Tippee (Eds.), *The Natural Gas Industry*, 2nd Ed., 1995]

102
103 (Co-author with Arthur S. De Vany) "Market-Based Rates for Interstate
104 Gas Pipelines: The Relevant Market and the Real Market" [*Energy Law*
105 *Journal*, 1995]

106
107 "Preparing for Gas-Electric Convergence: Mergers or Alliances,"
108 [chapter in A. Faruqui and J.R. Malko (Eds.), *Customer Choice: Finding*
109 *Value in Retail Electricity Markets*, 1999]

110
111 I also participate frequently in public forums and gas and electric industry
112 conferences. I have at times organized and chaired them. My biography
113 (Exhibit ____ (RJM-1)) includes a list of appearances over the past six years.
114 In March of 1996 I testified on financial aspects of electricity deregulation
115 before the U.S. House of Representatives Subcommittee on Energy and
116 Power.

117 118 119 **C. Purpose and Scope of Testimony**

120
121 Q. Please describe your role in this proceeding.

122
123 A. I have been retained by the City of Chicago to testify on the gas purchase
124 behavior of The Peoples Gas Light and Coke Company ("Peoples Gas" or
125 "Peoples"), a division of Peoples Energy Corporation ("Peoples Energy").
126 Specifically, I will testify on the prudence of Peoples' continuing choice not to
127 engage in financial hedging (to be defined below) when making those
128 purchases.

129
130
131 Q. Please provide a summary of your testimony.

132
133 A. I begin by putting Peoples' behavior in the context of the gas industry's
134 evolution. Since the 1980s gas has become both "commoditized" and
135 "financialized." In earlier times, local distribution companies (LDCs) obtained
136 their gas under long-term sales contracts with pipelines at inflexible prices.
137 Now they purchase nearly all of their gas on a short-term commodity basis,
138 or under longer-term contracts where prices change quickly with the
139 commodity price. Competitive gas markets provide numerous benefits to
140 both buyers and sellers, but many market participants wish to insulate
141 themselves from unpredictable fluctuations in prices. To do so, they actively

142 manage their gas storage and trade a wide variety of financial instruments
143 (futures, options, swaps, etc.).
144

145 Public utility regulators adapted to the volatility of competitive gas prices by
146 introducing purchased gas adjustments (PGAs) into the rate structures of
147 LDCs. PGAs changed rates paid by gas users to include amounts sufficient to
148 cover the costs of obtaining gas supplies. PGAs ensured the financial viability
149 of LDCs in the face of price fluctuations that they could not directly control,
150 and minimized the ongoing costs of the regulatory process by eliminating the
151 need for costly, repetitive ratemaking proceedings. PGAs continue to allow
152 regulators to examine the prudence of an LDC's gas acquisition practices,
153 and to order disallowances as necessary, in proceedings of limited scope.
154 Regulators may sometimes also introduce incentive regulation to reward
155 LDCs for successful efforts to reduce their costs. The effects of PGAs are not
156 invariably desirable ones, particularly for users who cannot avail themselves
157 of competitive suppliers. Depending on how they are administered, PGAs
158 can allow the regulated LDC to shift gas price risk away from its shareholders
159 and onto the LDC's users.
160

161 I next discuss some basic ideas about hedging and risk management that are
162 necessary to put Peoples' choices into context. In the recent past, the
163 industry has produced an increasing variety of "derivatives" to meet the
164 increasingly complex risk situations in which buyers and sellers find
165 themselves. Price fluctuations are inevitable, but financial hedge instruments
166 are available to mitigate the harm caused by their unpredictability. Hedges
167 benefit users by lessening their need to adjust to price instability, while still
168 allowing prices to signal the markets overall supply/demand situation.
169 Hedging cuts the variability of price, though not necessarily its average.
170

171 Most buyers and sellers with large risk exposures hedge both physically and
172 financially, using exchange-traded and over-the-counter instruments.
173 Financial hedges are valuable because of their liquidity and their ability to
174 spread risk without requiring physical deliveries of gas, although those
175 deliveries are often possible.
176

177 With this background, I consider Peoples' failure to financially hedge its gas
178 supplies during reconciliation year 1999-2000. Futures prices prior to the
179 winter months were both rising and increasing in volatility. Between spring
180 and winter of 1999 Peoples used these higher, more volatile projected prices
181 both for long-term forecasting and in formulating its short-term operating
182 strategies. Peoples Energy's other divisions engage in extensive financial
183 hedging, as do many of Peoples' customers who arrange for their own gas
184 and take only transportation service from the company. The firms that
185 provided supply contract proposals to Peoples were explicit about their
186 hedging strategies.
187

188 Regulated LDCs have been slower to engage in financial hedges than other
189 purchasers, sellers, and marketers of gas, probably due in large part to the
190 ability to shift some or nearly all price volatility risks to customers using PGA
191 mechanisms. Small customers in particular are exposed to volatility that
192 they cannot eliminate by their own actions, but that their LDC could. In this
193 context, effective regulation must do more than set rates that recover costs
194 and provide a fair return to investors. It must also provide incentives for the
195 LDC to produce at least-cost, and to adopt practices that a protected
196 monopolist might not need to try in order to maintain its revenues.
197 Elsewhere in the country, a substantial and growing number of LDCs have
198 responded to the risks of price volatility by utilizing financial hedges.

199
200 Even if spot and futures prices had been relatively stable, there would have
201 been little justification for Peoples' choice not to hedge. Futures prices reflect
202 only today's expectations and information, and cannot possibly incorporate
203 unforeseen events that will happen between now and the contract month.
204 Hedging protects against precisely those events. At least one other LDC in
205 Illinois – AmerenCIPS – saw the same data, chose to hedge, and its
206 customers were clear beneficiaries of the choice.

207
208 Peoples had no discernible reason to fear a disallowance by the ICC in the
209 event that winter cash prices turned out lower than the prices of the futures
210 that Peoples might have purchased. The ICC has no history of gas purchase
211 disallowances since the beginnings of competitive gas markets, and evidence
212 from its treatment of other Illinois utilities indicates that it is not averse to
213 hedging programs. The ICC has not objected to any known delivery or
214 storage strategy chosen by Peoples. Given the amounts at stake and the
215 volatility in the market, Peoples should have acted to moderate those risks
216 for its customers just as its unregulated affiliates did for Peoples Energy
217 shareholders. If, despite the Commission's history in this regard, Peoples
218 had a concern about recovering the costs of prudent risk management
219 practices, it could have pressed the Commission for a definitive ruling.

220
221 I conclude that Peoples should have engaged in a prudent hedging strategy,
222 on the basis of the facts and rationales discussed above. Inaction and
223 indifference were not prudent responses to the market data available to
224 Peoples that showed rising prices and substantial volatility. This conclusion
225 does not reflect "20-20 hindsight." If hedging is allowed, it will in some years
226 yield prices to customers that are higher than would occur without hedging,
227 and the Commission should justifiably deny the requests of intervenors who
228 want to penalize LDCs in years when that happens. My recommendation that
229 the Commission affirm the value and acceptability of a hedging policy stands
230 regardless of the future of transportation programs for small consumers.
231 Large transportation customers can put their own hedges in place or look for
232 marketers with preferred hedging policies. Extending transportation
233 programs to small users and permitting marketers to aggregate their loads in
234 no way lowers the value of hedging for those who remain with Peoples.

235
236 Q. Does your testimony provide an estimate of any overcharges or damages
237 that resulted from Peoples' choice not to hedge financially?
238

239 A. No. The scope of this proceeding established in the Commission's Initiating
240 Order does not include the 2000-2001 winter heating season – the period in
241 which retail customers most acutely felt Peoples' failure to have a prudent
242 hedging strategy in place.
243
244

245 **II. THE EVOLUTION OF HEDGING IN NATURAL GAS**

246

247
248 Q. Has hedging always been important in the gas industry?
249

250 A. No. During most of the gas industry's history, issues of hedging and risk
251 were of little importance to state regulatory agencies. Prior to the 1980s, the
252 supply chain for gas was quite different from today's. Interstate pipelines
253 purchased gas in the field from producers and resold it to LDCs, passing
254 through its average cost. To fulfill their supply obligations, pipelines
255 purchased most of their gas under long-term contracts at prices that did not
256 vary. Thus pipelines paid predictable prices for their gas supplies and so did
257 LDCs, who passed the cost on to consumers. During the 1960s and 1970s
258 wellhead prices were controlled at levels that created shortages and fears of
259 supply exhaustion, with no short-term markets available for gas that traded
260 in interstate commerce. There was simply no major source of price
261 instability, and regulators were more concerned with deliverability risks due
262 to the shortages.
263

264 Q. How have the gas markets evolved from long-term to short-term?
265

266 A. As the industry entered the 1980s, pipelines obliged to serve LDCs signed
267 "take or pay" contracts with producers. As gas prices began to rise with
268 phased decontrols, industrial users consumed less and the pipelines found
269 themselves with surplus gas that they had to pay for. To deal with the
270 problem, that gas came to be sold in short-term markets and pipelines
271 changed from being resellers of gas to "open-access" transporters of it for
272 producers and LDCs. The short-term market thrived as gas production
273 expanded with the decontrol of prices and LDCs found that they could often
274 obtain their supplies more economically at short-term prices than under
275 long-term contracts with pipelines. As LDCs became responsible for
276 arranging their own supplies, deliverability risk diminished, but price risk
277 multiplied and LDCs faced prices that fluctuated as they had not in the past.
278 A new industry of marketers arose to reallocate risk and to facilitate
279 transactions in gas and in the pipeline capacity needed to deliver it. Risks
280 akin to those faced by LDCs were also felt by large gas users who in some
281 states had gained rights to make their own transactions with distant

producers and to use interstate pipelines and pipes owned by their LDCs to effect deliveries.

Q. How did the gas market's participants adapt to these new risks?

A. Producers, marketers, and large users began to devise physical contract and financial instruments to help hedge the near-term price risks that had become endemic in the industry. Some were designed for individual transactions or over-the-counter trades, but by the 1990s risk management in the industry was dominated by the Henry Hub futures contract traded on the New York Mercantile Exchange, which supported an active over-the-counter market in customized risk management products. I discuss that contract in more detail in Section V below.

Q. Your previous answer did not mention LDCs. Why?

A. For reasons detailed in the testimony that follows, LDCs were, for the most part, slow to adopt techniques of risk management that by the 1990s had become common for almost everyone else that bought or sold gas in large quantities. The principal factor in their disparate response was the effect of purchased gas adjustment mechanisms.

III. THE REGULATION OF LDC GAS PURCHASING

Q. What is the economic significance of a "purchased gas adjustment clause"?

A. Price regulation requires a lengthy and complex proceeding if regulators are to ensure that consumers pay no more than the utility's prudently incurred costs of service and investors receive an adequate return on their capital. When expenses are stable and predictable, general rate cases typically take place only at intervals that are several years apart.

During the energy crises of the 1970s, prices of all major fuels became higher and less predictable. An LDC whose gas purchase costs were fixed in an earlier general rate case might find itself taking losses due to price increases that were beyond its control. The LDC might also be earning excessive rates of profit because gas prices had fallen since its last rate case. Regulators in nearly all states instituted purchased gas adjustment provisions that allowed utilities to promptly change rates to account for fluctuations in these costs. The PGA eliminated a need for frequent rate cases and rendered the finances of LDCs more predictable.

Q. Do PGAs eliminate the risk of such price changes?

329 A. No. They make the incomes of LDCs more predictable by passing some or all
330 of that risk to customers. Peoples' response to the ICC's 2001 Gas Price
331 Notice of Inquiry (Docket No. 01 NOI-1) acknowledges that:

332
333 ... Peoples Gas and North Shore are not currently exposed to market
334 risk caused by changes in commodity prices. This is due to current
335 Illinois rate regulation, which allows for recovery of gas costs through
336 the purchase gas adjustment clause. (P. 35)
337

338 This practice shifts risk rather than eliminating it, and makes the bills faced
339 by Peoples' retail customers less predictable. If retail customers are averse
340 to risk, the PGA makes them worse off.
341

342
343 Q. Do levelized customer payment plans mitigate the effects of the PGA
344 passthrough?
345

346 A. To some extent they lower the variability of customer bills. If part of the
347 LDC's gas supply is financially hedged, however, there will be less underlying
348 variability.
349

350
351 Q. What other effects on customers might PGAs have?
352

353 A. It is possible that the presence of a PGA might encourage LDC behavior that
354 is detrimental to consumers. The LDC may not watch its gas supply costs as
355 assiduously if their passthrough is guaranteed than it would if passthrough is
356 less certain. Some research by economists has found higher production
357 costs for electric utilities that can automatically pass on their costs of
358 generator fuel and purchased power supplies than for utilities that cannot.¹
359

360 361 **IV. HEDGING AND RISK MANAGEMENT**

362 363 **A. Hedging**

364
365 Q. What is a hedge?
366

367 A. According to an industry reference, "a hedge is a transaction entered into for
368 the purpose of protecting the value of a commodity or a security from

¹ See references in Robert J. Michaels, "Fuel Cost Adjustments: An Idea Whose Time Has Gone," *The Electricity Journal* 7 (Feb. 1994), 78-85.

adverse price movement by entering an offsetting position in a related commodity or security.”²

In many cases persons prefer greater certainty about the future and place a premium on risk avoidance. If so, they can trade risks with others who are less risk averse to achieve more certainty. However, like all scarce goods, protection against risks carries a price. I pay a fixed premium to an insurer to protect against fire, but choose not to insure against all risks because doing so is too costly. Others take the opposite risky position, but must be compensated sufficiently to make them take on these risks voluntarily. As in other markets, both sides can benefit by the reallocation of risks.

Q. Assume the price of a certain commodity that I need year-round is highly volatile, i.e., it varies widely and unpredictably relative to its average. Can I protect myself against risk by buying and holding the commodity for my own use?

A. A physical hedge such as this can give partial protection. If I want to consume bread at a uniform rate over the year, I can buy wheat when it looks cheap, store it, and use it as time passes. I am protected from a higher price in the cash market, but the protection is costly. First, I tie up funds that could have earned a return elsewhere in a commodity that offers me no financial return. Second, I still bear the risk that the market price of the good will fall over the year.

A financial hedge such as an exchange-traded futures contract likewise can only give partial protection. The purchaser of a contract pays its current price for future delivery of the good. The price of that contract will vary over its life as information (e.g., weather forecasts for a farm or fuel commodity) accumulates. If I buy a futures contract and the cash price of the commodity falls below the contract price, I have taken a loss in the same way that the holder of storage inventory has.

Q. If instead of paying a large amount of cash once a year and holding my own inventory I contract with a seller who offers me my monthly requirements at a fixed cash price per month, how has the allocation of risk changed?

A. A fixed-price contract such as this one does not remove risk. It shifts the risk, and the desirability of shifting depends on the costs and benefits. Unless spot prices are expected to fall substantially, the seller is likely to charge a premium for the fixed stream since it must be compensated for

² Fletcher J. Sturm, *Trading Natural Gas: a Nontechnical Guide* (PennWell Books, 1997), p. 32.

bearing the uncertainty. If market price wanders from month to month, the longer a fixed-price contract runs the farther the price is likely to be from the actual market price. The buyer benefits if market price rises and loses if it falls, but in either case a fixed-price contract stabilizes the seller's income.

Q. Can hedging reduce the average price I pay for a product relative to cash transactions?

A. There is no assurance that it will do so. In the physical buy-and-hold strategy, I only buy because I expect higher cash prices in the future. I hope to avoid paying more in the future by buying at what I think is low price today. The person who sells the commodity to me has opposing expectations — i.e., he or she believes that price will fall below the level we settled on and selling to me avoids a capital loss. Prices that entail commitments (e.g., for future delivery) incorporate both the buyer's and seller's differing expectations about market conditions that will prevail in the future.

What hedging can offer is greater certainty about price, and that certainty can increase with the complexity of the hedging activity. I can, for example put a "collar" on price by simultaneously holding a put option (option to sell) and a call option (option to buy) whose strike prices bracket an acceptable range of variation. However low the market price, I can sell the good for the strike price of the put option, and however high it is I can buy it at the strike price of the call. The options themselves, however, are written by people with expectations that differ from mine, and I must pay market-determined prices for them.

B. Diversification

Q. What other methods might one use to reduce price risk?

A. Another strategy is diversification. Diversification cuts risk because it allows me to better avoid extreme outcomes. Assume I hold two investments whose returns vary at random but are not highly correlated (i.e., good performance of one is only infrequently associated with good performance of the other). Only if both perform poorly do I take the largest possible loss, whereas if I am specialized in only one, the probability I will take the largest possible loss is greater. There is a decrease in the variability of the returns because it is relatively more likely that one will perform well and the other will not.

Q. If I combine some fixed-price supply contracts with contracts that are market-sensitive have I cut my overall risk?

459 A. Yes. In the event market prices rise I am protected from their full impact by
460 the presence of a fixed-price arrangement for some of my supply. In the
461 event market prices fall, I am able to purchase some of my supply more
462 cheaply because I hold market-sensitive contracts. There is, however, a
463 tradeoff. The larger my holding of market-sensitive contracts, the bigger my
464 loss in the event market prices rise, and the larger my holding of fixed-price
465 contracts, the bigger my loss if market prices fall.

466
467
468 Q. What are the gains if I use both physical and financial hedges rather than
469 rely exclusively on physicals?

470
471 A. First, there may be several types of risk that are of concern to me. In
472 addition to price uncertainty, events ranging from natural disasters to
473 supplier bankruptcy can produce deliverability risk for a buyer. If I am a
474 seller, I will be concerned that my counterparty will be unable to pay or
475 otherwise break its contract with me. Diversification among supply sources
476 and partial reliance on a stored inventory are physical hedges that can
477 reduce deliverability and counterparty risk.

478
479 Financial hedges, as noted above, are valuable methods for coping with price
480 risk, but they can also make it easier to adjust my risk exposure. Futures
481 contracts, for example, often trade in deep, liquid markets that allow me
482 quickly and cheaply to alter the risks I hold as my expectations change.
483 Depending on details of the situation I may want to hold a variety of hedge
484 assets — futures contracts can alleviate my concerns about price levels, but
485 to deal with volatility I might also take a position in options. In the event the
486 transaction between myself and one seller has certain unique aspects, we
487 may prefer to use over-the-counter risk management tools. These are more
488 customized than exchange-traded instruments and trade less extensively.

489
490
491 Q. Isn't the use of financial hedges essentially speculation?

492
493 A. Speculation is frequently defined as a non-hedged position where a change in
494 a commodity price changes my wealth. The use of financial hedges is no
495 more speculative than the non-use of financial hedges. When I simply buy
496 and hold an inventory, I am speculating that market price will go higher, but
497 leave myself open to the risk that it will be lower, such that I could have
498 satisfied my needs more cheaply on a month-to-month basis. This strategy
499 is mistakenly viewed as non-speculative only because the onlooker sees no
500 specialized financial asset being traded.

501 502 503 **V. HEDGING NATURAL GAS**

504 505 **A. Financial Hedging**

- 506 Q. What financial hedge instruments are available for gas supplies?
507
- 508 A. The most important is the Henry Hub futures contract, traded on the New
509 York Mercantile Exchange (NYMEX) since April 1990. As gas markets have
510 expanded to include more transactions and more types of participants, the
511 use of that contract has risen rapidly. (See, Section VI below.) Contracts
512 exist for deliveries in each of the next 36 calendar months. The contract
513 quantity is 10,000 million British Thermal Units (MMBtu, approximately 10
514 million cubic feet) for delivery over the month in as uniform as possible a
515 stream at the Henry Hub, a confluence of pipelines in Louisiana. Other
516 instruments soon followed on the contract. In 1992, NYMEX instituted
517 options on gas futures. Alongside exchange-traded instruments has grown
518 an over-the-counter market in options and more complex derivatives such as
519 swaps.
520
- 521 Q. Why would a utility located in Chicago want to make or accept deliveries at a
522 location in Louisiana?
523
- 524 A. A Chicago utility does not want to make or accept deliveries at a location in
525 Louisiana. The Henry Hub establishes a basis for designing risk management
526 tools. Only a small fraction of these contracts go to delivery. Instead, for
527 most buyers, sellers, and marketers they serve as protection against adverse
528 price movements. Traded through an exchange which guarantees
529 counterparties, they are a highly liquid tool for altering one's risk exposure as
530 market conditions change.
531
- 532 Q. Even if it does not go to delivery in Louisiana, how can a futures contract or
533 other derivative help me deal with price risk for gas used in Chicago?
534
- 535 A. The difference between price at Chicago and price at Henry Hub is known as
536 basis. It fluctuates with changes in regional patterns of production and
537 demand, and with pipeline charges. Certain hedges allow producers or
538 consumers to cut basis risk. For example, assume I am a large user in
539 Chicago and have my supply hedged by holding a Henry Hub futures
540 contract. I still run the risk that the delivered price to Chicago will rise
541 relative to the Louisiana price. To protect myself, I can do an over-the-
542 counter basis swap. I buy the current value of the basis for the duration of
543 my transaction, promising to pay my counterparty a fixed amount per (e.g.,
544 month) and making the counterparty responsible for dealing with instability.
545
546
547
- 548 Q. Can I use the futures contract to effect delivery in Chicago?
549
- 550 A. Yes, through a process known as Exchange of Futures for Physicals (EFP). A
551 buyer in Chicago who holds a futures contract and a seller wishing to deliver
552

there can negotiate with each other to trade the contract for delivered gas. The negotiation centers on the difference in value between the futures price and the delivered gas. Approximately 90 percent of the futures contracts that go to delivery are traded as EFPs.

B. Physical Hedging

Q. Can an LDC hedge without using financial instruments?

A. Yes, it can handle some deliverability risk and some price risk with storage strategies. However, especially as to price risk, storage strategies' effectiveness is limited. Almost any gas purchase decision is determined in part by considerations of risk. For example, leaving interruptible service aside, LDCs are obliged to make arrangements that will keep sufficient gas on hand for the worst weather conditions that can reasonably be envisioned. They do so by choosing a mix of baseload contracts, swing contracts and storage injections and withdrawals. This mix of delivery patterns and options constitutes a physical hedge.

Q. What other risks can storage hedge against?

A. Storage can also hedge price risk. When market price is high during peak use season, releases from storage are an alternative to purchases. When price is low, injections to storage are in order. The LDC may not have perfect foresight, but this policy potentially allows it to lessen volatility. For billing purposes, extractions from storage are usually priced at their weighted average cost of the gas (WACOG).

Q. Can storage and related policies hedge all price risk?

A. No. For example, unforeseen weather conditions can unpredictably change storage conditions to adversely affect the LDC's financial position. The company will often be able to change its risk exposure more quickly and at lower cost by trading financial instruments rather than gas. Gas in market-area storage (i.e., in or near the LDC's territory) may be far less liquid (e.g., there are fewer probable purchasers if the utility wants to divest it) than financial instruments. Choices regarding storage may be important parts of an LDC's risk management program, but excluding financial instruments from that program needlessly eliminates a potentially important tool that can benefit the LDC's customers and reduce risk for its shareholders.

598 **VI. HEDGING IN REGULATED INDUSTRIES**

599
600 Q. Alfred E. Kahn, former head of the New York Public Service Commission and
601 scholar of regulation, has written that "[t]he traditional legal criteria of
602 proper public utility rates have always borne a strong resemblance to the
603 criteria of the competitive market in long-run equilibrium."³ How does LDC
604 regulation comport with the standard of a competitive market?

605
606 A. First, that standard underlies calculations of economic efficiency, i.e. least-
607 cost production and rates equal to the marginal costs of serving different
608 customer classes. In practice, regulators must consider more than economic
609 efficiency, for example the equitability of the rates and service obligations
610 they set.

611
612 Second, competition is about more than efficiency at a single instant. Over
613 the longer term a seller's survival may depend on its ability to minimize costs
614 and to adopt better technologies and business methods. For a regulated
615 monopoly, survival is usually less of a threat. Hence regulators must to
616 some extent monitor the effectiveness with which regulated firms are acting
617 to minimize their costs and to adopt proven, prudent new techniques. I say
618 "to some extent" because there is also a proper role for managerial discretion
619 within the regulated firm, and a gray area between the proper subjects of
620 managerial and regulatory decisions.

621
622
623 Q. Is LDC risk management an area that regulators should monitor for prudent
624 business behavior?

625
626 A. The best evidence that it is lies in the speed and thoroughness with which
627 financial innovations have spread through competitive, unregulated
628 industries. The techniques of futures and option analysis are now applied to
629 all sorts of commodity risk, and the range of financial derivatives available to
630 manage risk continues to grow.

631
632
633 Q. What has been the pattern of adoption of the NYMEX futures contract?

634
635 A. The contract was introduced in April of 1990 and became the fastest growing
636 contract in the 123-year history of NYMEX.⁴ Total open interest (number of
637 contracts in existence) is currently approximately 380,000 (up from 220,000
638 in 1997), allowing a deep and liquid market.⁵ The contract's price is the

³ Alfred E. Kahn, *The Economics of Regulation* (reprinted edition, 1989), p. 63.

⁴ *Foster Natural Gas Report*, April 6, 1995, p. 17.

⁵ *Inside FERC's Gas Market Report*, April 30, 2001, 11; *Gas Daily*, Aug. 18, 1997, 2.

reference point for numerous over-the-counter instruments. I discuss the adoption of financial hedging by LDCs in the next section.

VII. HEDGING BY ILLINOIS LDCs

A. Hedges at Peoples Energy

Q. What is your understanding of price risk management (hedging) at Peoples Gas?

A. Peoples Gas, the regulated firm, does not actually trade in futures, options, or OTC instruments. But, there are ways in which the company uses data from financial derivatives of gas. Reported futures prices are important inputs for near-term and mid-term supply planning at the company. Peoples forecasts its gas costs using NYMEX futures prices, with accounting for basis differentials (Response to Commission Staff Data Request ENG 2.013). The company's "What's Best" or "Gas Dispatch" Model uses them in a decision-making process to minimize costs in annual, seasonal, and shorter-term applications. (Response to City Data Requests CTY 1.015 and CTY 1.017)

Q. Do other affiliates of Peoples Energy engage in financial hedging?

A. Yes, in roles as both producers and users. In its 2000 Annual Report Peoples Energy states that approximately 74 percent of production in its oil and natural gas properties is hedged for the next 12 months by swaps and options. (Annual Report at 28.) Peoples Energy views these properties themselves as "providing the company a hedge against the effect of gas price fluctuations on [its] other businesses." (Annual Report at 16.)

In its role as consumer, Peoples has hedged 7.3 Bcf of gas purchases for its Elwood power plant, a joint venture with Dominion Resources. The program is intended to "reduce price risk, stabilize cash flow, and extract maximum value from its investment." (Annual Report at 29.) Peoples Energy's total hedged gas rose from 9.3 Bcf to 26.7 Bcf between September 30, 1999 and September 30, 2000.

Finally, on page 3 of its 2000 Annual report, Peoples Energy notes that:

"In order to mitigate the effect of [extremely warm weather], last year we acquired a weather insurance policy. This helped to soften the effect of warm weather on our financial results for this year. Our weather insurance program is in place for four more years to protect shareholders when we experience extremely warm weather, while we retain the opportunity to benefit when weather is colder than normal."

Insurance of this type can reasonably be considered a financial hedge.

- Q. Are the benefits of that insurance policy flowed through to the bills of Peoples' retail customers?
- A. According to Peoples' Responses to the ICC's Notice of Inquiry on gas prices, "[t]he insurance premium is paid by Peoples' Energy and any settlement is recorded on the parent company's books." I have found no documentation of a process whereby retail customers enjoy any part of these benefits.

B. Hedging by Customers, Suppliers, and Other LDCs

- Q. Is there evidence of financial hedging by Peoples' transportation customers?

- A. I have no specific knowledge of customers or hedged volumes, but it is well known in the industry that large users either manage their own hedges or select marketers they deal with partially on the basis of their hedging capabilities.

- Q. Is there evidence of financial hedging by Peoples' gas suppliers?

- A. Yes. Responses by nine major gas marketers (confidential documents) to Peoples' 1998 Request for Qualification are attached to the company's response to Commission Staff Data Request Eng 2.071. The RFQ explicitly asked about risk management philosophies and tools that respondents utilized. (Attachment 1, p. 4.) All respondents discussed their programs, some at length.

- Q. Is there evidence that Peoples was concerned about these risks?

- A. The RFQ was issued in response to a proposed ICC fixed price order that "would shift the **price risk, volumetric risk, and non-performance risk and operations risk** from the customers to PEC." (Attachment 3, p. 1, emphasis in original.) Criteria used in the selection process for finalists again included risk management (Attachment 3, p. 2), and points in favor of the winner (Enron) included its being "[w]illing to accept all risk associated with a full-requirements supply contract." (P. 4.)

In its Response to City Data Request CTY 1.009, Peoples states that it considers suppliers' risk management abilities because suppliers with risk management expertise can offer different types of pricing, and because "suppliers with poor risk management capabilities may be less reliable."

733 Q. Are Peoples' customers protected by market-price-sensitive contracts that
734 are hedged by the suppliers?
735

736 A. No. Suppliers who hedge have taken actions to limit their own risk. As
737 noted earlier, the PGA protects Peoples from price risks. Peoples' customers
738 remain subject to the price risks associated with recovery of the market price
739 the company must pay for the gas.
740

741
742 Q. How extensive are financial hedging activities of LDCs elsewhere in the
743 country?
744

745 A. The most recent data are available in a report from the American Gas
746 Association.⁶ The Association surveyed LDCs regarding various aspects of
747 their operations during the winter of 1999-2000. It found:
748

749 "Forty-seven percent of the LDCs in the survey said they used financial
750 instruments to hedge a portion of their gas supply purchases during
751 the 1999-2000 winter. Of those responding, 22 percent said they
752 hedged more than half of their gas purchases, and 38 percent
753 reported having hedged more than 25 percent but less than 50
754 percent of their purchases. Fixed-price contracts were the most widely
755 used tool during the 1999-2000 winter heating season, with 58
756 percent of the LDCs using hedging strategies in the survey hedging as
757 much as 37 percent of the gas volumes delivered to meet their peak-
758 day requirements. Also, 30 percent of LDCs relied on options and
759 futures contracts to hedge their supplies. One company even reported
760 using weather derivatives as a hedging tool." (P. 12)
761

762 Respondents to the survey (a total of 73 LDCs responded) included many
763 large LDCs (including Peoples Energy), but information is only available on
764 numbers and percentages of respondents, not on volumes, hedged price
765 volatility in individual markets, or which markets' LDCs chose to hedge.
766

767
768 Q. Do any other Illinois LDCs engage in hedging?
769

770 A. Yes, In AmerenCIPS' ICC reconciliation proceeding (Docket No. 00-0711) the
771 person responsible for gas supply and transportation testified on the
772 company's procurement practices. Mr. Scott A. Glaeser reported that the
773 company holds a number of firm supply contracts with producers, for
774 baseload, swing, and peaking gas. Their prices are based on published
775 indices and NYMEX prices. In addition, AmerenCIPS holds some fixed price

⁶ "LDC System Operations and Supply Portfolio Management During the 1999-2000 Winter Heating Season," Energy Analysis 2000-03.

supply contracts and some of the supply contracts have embedded hedges. As physical hedges the company relies on storage arrangements with pipelines. The company's portfolio varies with the seasons: during the on-peak period it purchases only firm gas, but during off-peak months spot-market gas can be procured at acceptable risk levels. (Direct Testimony at 7-9.)

Q. What are "embedded hedges"?

A. They are financial instruments contained within gas supply agreements. For example, some of the gas in an agreement may be covered by an embedded call option that puts a ceiling on its price over some period. Its structure is the same as an exchange-traded call which gives its holder the right but not the obligation to purchase gas at a predetermined strike price. Likewise, an embedded put option might give AmerenCIPS the right to sell gas that it does not want to take under the contract back to the supplier at a fixed price. Mr. Glaeser described "costless collar" provisions in market-adjusted contracts that cap the price and also specify a minimum that must be paid per MMBtu regardless of the market price.

C. Peoples' Rationales for its Hedging Behavior

Q. Does Peoples gas engage in financial hedging?

A. In response to Staff Data Request ENG 2.028, Peoples reports that it did not enter into "any physical or financial contracts other than supply contracts indexed to a market price." The company responds to Staff Data Request ENG 2.060 by explaining that

... at the time [Peoples] was planning (spring of 1999) for the winter period, projected prices showed little volatility. Accordingly, the use of hedging instruments would not have served the objective of mitigating volatility during the reconciliation period."

Q. Please comment on Peoples' rationale for not using hedges.

A. Peoples price projections during the spring 1999 planning period were no more than NYMEX futures for the winter months. (Response to City Data Request CTY 1.022.) Peoples concluded that they showed little volatility so they chose not to financially hedge any part of its gas supply. (Response to City Data Request CTY 1.022) Hedging would have brought lower prices than actually occurred during the reconciliation period, but that outcome was by no means guaranteed. Peoples also does not explain what it would have done had NYMEX prices been unstable, as occurred later in the year.

823 In fact, Peoples chose not to hedge during both periods of perceived price
824 stability and periods when the NYMEX prices were unstable. Peoples states
825 that it was not foreclosed from transacting in futures at the end of spring
826 (Response to City Data Request CTY 1.008), and that it observes futures
827 prices over the entire year (Response to City Data Request CTY 1.024). In
828 Illinois, AmerenCIPS saw the same data (but possibly made different
829 projections) and set a goal of hedging a significant fraction of their
830 purchases.

831
832
833 Q. In your last answer, you made statements about price instability. How does
834 one determine instability?

835
836 A. One calculates the volatility of observed prices. For these purposes, Peoples
837 adequately defines volatility as "a rapid, unpredictable, short lived (up or
838 down) price fluctuation." (Response to City Data Request CTY 1.022)

839
840 Q. You state above that Peoples concluded that projected prices showed little
841 volatility at the time it was planning for the 1999-2000 winter heating season
842 during the spring of 1999. Have you conducted any analysis of price levels
843 and volatility that calls into question Peoples' conclusion?

844
845 A. Yes. I and employees of TCA acting under my supervision collected data on
846 futures prices from industry newsletters whose data are often used in such
847 applications as contract indexation. The calculation took year-long "strips"
848 of futures covering the contracts ending in October 1999 through September
849 2000 (the Reconciliation Year). The prices of the twelve contracts in a strip
850 were averaged for each day the contracts traded, and volatility was
851 computed using the daily averages. Exhibit ____ (RJM-2) graphs the volatility
852 of this futures strip between February and December of 1999.⁷

853
854
855 Q. What do you conclude about Peoples' description of volatility in the spring of
856 1999?

857
858 A. Contrary to Peoples' conclusion, volatility in the Spring of 1999 fluctuated
859 widely. On March 4, the volatility of the contract strip was 8.7 percent
860 (0.087), and by March 31 it had risen by 85 percent, to 16.1 percent
861 (0.161). In less than another month, on April 28 that high figure had fallen
862 by over 50 percent to 0.074, only to rise by 111 percent to 0.156 on May 19.
863 Peoples' "projected prices" are either futures prices themselves or figures
864 derived from them (Response to Commission Staff Data Request ENG 2.013).

⁷ In calculating volatility, we took the standard deviation of the natural logarithms of the last twenty days' prices and multiplied it by the square root of 252, the number of trading days in the year. This is a commonly-used formula for calculating annualized daily volatility.

865 During the period when they were planning for winter 1999, these prices did
866 not show "little volatility." (Response to Commission Staff Data Request ENG
867 2.060.)
868

869
870 Q. Were there any other substantial changes in volatility for the contract strip
871 prior to winter 1999?
872

873 A. Yes. In September 1999, volatility more than doubled, and then remained at
874 that higher level for the three ensuing months. A sustained change of this
875 size was unprecedented in the years since the deregulation of gas markets.
876 The increase in volatility is a phenomenon quite independent of any change
877 in the average price. Page 2 of Exhibit __ (RJM-2) shows that while price
878 was indeed rising between April and September, its instability is more
879 pronounced during and after September than before.
880

881
882 Q. Is there evidence that Peoples made any response to this change?
883

884 A. I have seen none.
885

886
887 Q. Peoples has expressed a fear that in the event spot prices fall below contract
888 prices the ICC will disallow those losses. Has the history of ICC policy
889 regarding gas purchase prudence seen substantial disallowances?
890

891 A. The ICC Staff NOI's Manager's Report states that since decontrol of gas and
892 pipeline gas markets began in the early 1980s, the ICC has never found an
893 LDC gas purchase imprudent. (The Citizens' Utility Board (CUB) also asserts
894 this in its reply comments (at 4) in the gas price NOI proceeding.) ICC Staff
895 has at least once in the past viewed a questionable hedging program as "an
896 honest mistake," a position agreed to by the Commission. (NOI Manager's
897 Report at 47-48) It is also not clear why the ICC would set higher standards
898 for financial hedges than it does for physical hedges such as storage, where
899 an LDC can make a mistake-in-retrospect by misjudging the future path of
900 prices in determining injections and withdrawals.
901

902
903 Q. In the Gas Price NOI Manager's Report to the ICC (at 43, fn 21), Donato
904 Eassey of Merrill Lynch is reported as saying at a January 24, 2001
905 roundtable that "historically, for 13 of the past 15 years, you would have
906 been better off buying in the spot market because the spot market prices
907 were lower than the firm prices." Is this an argument against financial
908 hedges?
909

910 A. It is not clear what is meant by "firm" in this context (normally the term
911 refers to a flow pattern rather than price fixity.) If it means fixed price, the

statement is referring to an odd historical period. Wellhead prices peaked in 1984, and were on an almost uniform downward trend until recently. If the general trend is downward, locking-in the spot price as of most dates is a losing strategy. Unfortunately, no one ever was in a position to know in advance that spot prices would fall for certain.

The choice between hedged and spot prices is not the same as the choice between fixed and spot prices. If the market's general expectation is that prices will fall, the terms of hedge contracts will reflect that expectation. On average we should see hedged annual bills roughly equal to bills at spot prices but less variable. The relevant comparison is between spot prices and hedged prices looking forward, not, as Mr. Eassey's statement suggests, between spot prices and fixed prices looking backward.

Q. Are there aspects of Peoples' system configuration that make financial risk management impossible?

A. Peoples' Response to City Data Request CTY 1.001 states that there are none. Its response to City Data Request CTY 1.002 goes on to state that there are no aspects of its configuration that make physical risk management preferable to financial risk management.

Q. At the time when Peoples makes its forecasts of gas costs, is it foreclosed from any type of financial risk management transactions?

A. According to the company's response to City Data Request CTY 1.008, no. According to its answer to City Data Request CTY 1.010, the company does consider hedging at the time it identifies its supply pricing options. In doing so, it collects information on futures and forward prices. (CTY 1.011)

Q. Are you aware of any petitions to the ICC by Peoples requesting an explicit statement of policy regarding financial hedges in addition to the Commission's orders accepting hedging in other PGA proceedings?

A. No, even though purchased gas is the single largest cost item and the single largest risk faced by an LDC.

Q. Are you aware of any ICC policies currently in effect that disfavor financial hedging of gas supply costs?

A. No.

959 Q. Are you aware of any changes in Peoples' hedging practices since September
960 1999?

961
962 A. I have seen no documentation of any such changes.
963
964

965 **VIII. CONCLUSIONS**

966
967 Q. On the basis of your investigation, what do you believe that the ICC should
968 conclude about Peoples' financial hedging policies?
969

970 A. The ICC should conclude that Peoples should have financially hedged its gas
971 supplies in the past, and that it should do so in the future.
972

973 Q. Doesn't this conclusion come with "20-20 hindsight," i.e. you have examined
974 the reconciliation year, determined that Peoples' ratepayers would have
975 saved if the company had hedged, and on that basis you favor hedging as a
976 policy?
977

978 A. No. In this testimony I have explicitly stated that financial hedging may not
979 lower Peoples' gas costs averaged over the coming years. If hedging were
980 no more than an activity that results in the same average price, it would
981 indeed be unproductive, but it does more. The massive growth in use of the
982 NYMEX contract and its derivatives by all sides of the industry indicates that
983 it is indeed producing a valuable service for them protecting against the
984 volatility of gas prices. Peoples' transportation customers often use
985 derivatives where Peoples does not, increasing their own costs compared
986 with those of Peoples' unhedged supplies. Even if ICC policy changes to
987 allow marketers to aggregate groups of small consumers, hedging will still be
988 valuable to those users who remain with Peoples, whether by choice or
989 default.
990

991
992 Q. Please evaluate ICC Staff's position that "one disadvantage [of utility
993 hedging] is that reducing retail customers' exposure to price fluctuations in
994 the spot market reduces economic efficiency, which is one of the objectives
995 articulated in the Public Utilities Act"? (NOI Manager's Report, p. 44)
996

997 A. I have no opinion on the content of the Public Utilities Act. I do, however
998 question Staff's concept of efficiency. First, the customers most affected by
999 this proceeding do not see spot market outcomes until their bills arrive some
1000 time after the fact. Second, there is an implicit assumption in the reasoning
1001 that economic efficiency is exclusively in the domain of spot prices. If I must
1002 make substantial investments of time and other resources to mitigate the
1003 unpleasant effects of unstable spot prices, the value of price signals is not a
1004 'free lunch.' By this standard, Staff should be critical of industrial
1005 transportation customers and marketers who "destroy" the value of these

1006 signals by engaging in hedge operations and signing contracts that embody
1007 price protection, rather than closing plants and laying off workers on an
1008 unpredictable day-to-day basis.
1009

1010
1011 Q. Does this end your prepared testimony?
1012

1013 A. Yes.